



Statement Before
the United States Senate
Committee on Commerce, Science &
Transportation

Hearing on Corporate Average Fuel
Economy Standards

January 24, 2002
Washington, DC

Good morning. My name is Allen Schaeffer and I am the Executive Director of the Diesel Technology Forum.

The Forum is a unique organization of leaders in the clean diesel technology industry. Our members include diesel engine and vehicle manufacturers, diesel fuel refiners, manufacturers of emissions treatment systems, and key suppliers to the diesel industry.

We appreciate the opportunity to appear before the committee today on the important issue of energy consumption in the transportation sector, and would like to make three key points:

- (1) the nature, importance and inherent benefits of diesel technology;
- (2) the role of light-duty diesel engines in meeting energy and environmental goals in Europe, and
- (3) how diesel engines can play a greater role in meeting US energy goals.

I. Nature and Importance of Diesel Engines

Diesel engines are the most efficient internal combustion engine, converting more of the chemical energy (or fuel) to mechanical energy, with less energy wasted. The combination of the unique compression-ignition cycle, and the use of diesel fuel, which packs more energy per unit volume than gasoline results in a highly efficient power system.

Diesel's inherent performance advantages include more power at lower engine speeds; better fuel efficiency; greater safety; more durability; and more power from a given size engine.

Today's clean diesel technology is perhaps best known as the technology source that powers over 90 percent of all commercial trucks, nearly all fire and rescue equipment, two-thirds of all farm equipment, 100 percent of all railroads and commercial barges and boats. Diesel power plays an important role in the economy, and as an industry it contributes \$85 billion each year—more than the iron and steel industries.

Diesel technology also has untapped potential for helping the nation achieve greater energy security and energy efficiency in the transportation sector.

II. US Falls Behind Europe In Use of Clean Diesel Cars

The United States and Europe are taking very different approaches to the use of clean diesel technology to improve fuel economy in passenger cars and light-duty trucks. Diesel automobiles are extremely popular in Europe, and demand continues to grow. One in every three cars sold in Europe today is powered by a diesel engine. Experts predict that diesels will soon gain about 40% of the European market. There are several reasons why diesel cars have won such approval in Europe. These include:

- *Inherent Performance Advantages of Diesel.* Europeans have found that light-duty diesel vehicles – cars and small trucks – offer significant inherent performance advantages over gasoline-powered vehicles. These include:
 - *Better Fuel Efficiency.* Light-duty diesels use 30-60% less fuel than gasoline engines of similar power. Some of the most advanced models are attaining astonishing fuel efficiency, such as the European-market Audi A2 that achieves 87 mpg on the highway.
 - *More Power.* Diesels produce more drive force at lower engine speeds than gasoline engines.
 - *More Durability.* A typical light-duty diesel engine is built to last well over 200,000 miles. Diesel engines also require less maintenance and have longer recommended service intervals than gasoline engines.

- *Fewer Greenhouse Gas Emissions.* Because diesels burn less fuel than gasoline vehicles, they also produce significantly lower emissions of greenhouse gases such as carbon dioxide.
- *Clean and Quiet Technology.* Use of the latest diesel technology has nearly eliminated the noise and smoke that many Americans remember from early diesel cars. With the application of advanced technologies such as direct injection lean-burn combustion, particulate traps and catalytic converters, diesel vehicles are now a clean and quiet alternative to less efficient gasoline powered cars.

These and other findings came out of our study entitled “**Demand for Diesels: The European Experience**”, that highlights the dramatic differences in clean diesel technology use and consumer acceptance of light-duty automotive applications between the two continents. The Europeans are able to reap the efficiency and environmental rewards of clean diesel technology.

The contrast in diesel usage between the U.S. and Europe is stark: In Europe - one of every three new cars sold today is powered by clean diesel technology and in the premium and luxury categories, over 70 percent are clean diesels. But in the US - light-duty diesels account for only about 0.26 percent of all new cars sold, with only slightly higher figures in the light-duty truck markets.

III. Diesel Engines Can Play a Key Role in the U.S. By reducing energy Consumption in the Transportation Sector

Given the inherent energy and efficiency benefits and the existing fueling infrastructure, clean diesel technology can help the US meet its energy and environmental goals.

The July 2001 report by the **National Academy of Sciences** evaluating fuel economy standards noted the possibilities for reducing petroleum consumption with the use of clean diesel technologies

“direct-injection diesel engines are among engine technologies with high-potential for improved fuel consumption...and “the application of small,

turbocharged direct injection diesel engines has seen tremendous expansion in passenger cars and light-duty trucks in Europe.”¹

There are other more direct indications of the role that diesel engines can play in reducing energy consumption here in the US. Last October, the Department of Energy issued its annual fuel efficiency ratings of new vehicles. This year like previous years, diesel-powered vehicles captured three of the top 5 ratings, exceeded only by the gasoline-electric hybrid vehicles. Advanced European diesel technology passenger vehicles exceed today's US hybrid fuel efficiency by over 60 percent.

One of the greatest opportunities for clean diesel technology is in the light-duty trucks and sport utility vehicle categories. In 2001, light-duty truck and SUV sales exceeded 50 percent for the first time ever. The use of advanced clean diesel engines in these vehicle categories offer a cost-effective and efficient near-term alternative that can reduce fuel consumption by 30 to 60%. Coupled with the tremendous advances in exhaust emissions controls and after-treatment technology, today's clean diesels also have significantly lower emissions.

According to the US Department of Energy, diesel is a proven and readily available technology. The diesel has been tested and refined for more than a century and its versatility and reliability are legendary.

While technology is constantly evolving, the few models of diesels available to American consumers today demonstrate that light-duty diesel vehicles can have economic benefits for consumers through reduced fuel costs over current technology gasoline vehicles. For example:

A 2001 turbo-diesel Volkswagen Jetta GLS costs \$500 dollars less than the turbocharged gasoline powered Jetta GLS² and the owner of a diesel Jetta can expect to save over \$2300 in fuel costs over a 100,000-mile vehicle life at year 2000 fuel prices.³

Fuel cost savings with diesel are proportionally greater for larger vehicles handling heavier loads. The owner of a 1999 diesel Ford F-250 Super-duty pickup truck would pay \$1,650 more for a diesel powered version, but because the diesel gets 46% better mileage under towing conditions, the



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diesel owner would save over \$8,000 in fuel costs over the course of 100,000 miles.⁴

It is important to note that both of these examples for illustration only and are a snapshot in time. As technologies improve and strategies for regulatory compliance evolve for both gasoline and diesel engines, these comparisons will necessarily change.

The proportional effect of these fuel savings is particularly significant in the context of the U.S. auto market where now over half of all new vehicles sold are SUVs, vans or pickups.⁵

Because diesel engines are more powerful than gasoline engines, producing more torque at lower engine speeds, they are perfectly suited for improving the fuel economy of this burgeoning U.S. light truck/SUV market. Nearly all of the growth in U.S. vehicle sales over the past 25 years has been in light trucks. Since 1975, light trucks, which include SUVs, pick-ups and vans, have seen annual sales growth from 2 million to nearly 7.5 million. The average new SUV/light truck currently gets 20.7 mpg compared to 28.1 for the average new car. Application of diesel technology in the SUV market could immediately increase the nation's average fuel economy by targeting a large market share of vehicles that currently achieve lower fuel economy ratings due to their size.

The power and efficiency of diesels can also be used to reduce nationwide fuel consumption without the safety compromises associated with building lighter vehicles. Numerous studies by the National Highway Traffic Safety Administration, the National Academy of Sciences, the Harvard Center for Risk Assessment, and the Insurance Institute for Highway Safety have found that vehicle weight reductions in the early 1980's tended to reduce vehicle safety and led to thousands of additional vehicle fatalities.⁶ Because diesel engines are more powerful and more fuel efficient at the same time, the use of diesel allows fuel economy improvements to be realized without building lighter, less safe vehicles.

Because of the size of vehicles driven in the United States and the popularity of automobile transportation, the United States has the potential to reap substantially greater fuel and emissions savings than the less automobile-oriented European countries. In 1992, automobile miles-per-capita in the U.S. were nearly four times the per-capita automobile miles traveled in France, Italy, the former West Germany and Great Britain combined.⁷ The number of vehicle miles traveled in the U.S. has doubled since 1970 and is expected to rise by an additional 50% by 2020. The average fuel economy for all passenger vehicles on the road in the U.S. is 20.6 mpg. Thus, American drivers on average use many more gallons of gas than their European counterparts. Because Americans burn more fuel, the potential for fuel savings and corresponding CO₂ emissions savings from increased use of diesel is much greater than the savings experienced in Europe.



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More specifically, the U.S. Department of Energy has estimated that increasing the market share of light-duty diesel technology to 30% would reduce net crude oil imports by 700,000 barrels per day by 2020 – an amount equivalent to cutting in half the total energy used each day in the state of California.⁸

Conclusions.

We believe there are significant opportunities for advanced technology clean diesel engines to play a much larger role in boosting the fuel efficiency of popular sport-utility vehicles and light-trucks.

In May of this year, the Diesel Technology Forum and the US Council for Automotive Research (USCAR) will bring advanced clean diesel technology cars, trucks and SUVs here to the US Capitol for you to have an opportunity to experience the technology first hand. We hope that you will join us.

In conclusion, members of the Diesel Technology Forum – while not taking a position on the specific aspects of Corporate Average Fuel Economy Ratings, believe that clean diesel technology can and should play a greater role in reducing energy consumption in personal transportation.

Thank you and I would like to ask that our written statement be included in the record, and would be happy to answer any questions.

Forum members are the nation's most progressive manufacturers and suppliers of diesel fuels, engines, and components, along with their partners in finance and business. Members include Caterpillar, General Motors, Cummins, Robert Bosch, Detroit Diesel, BP, ExxonMobil, Eaton, Delco-Remy, Honeywell-Garrett and the Donaldson Company. For more information, contact the forum at 703-234-4411 or visit our website at www.dieselforum.org.

¹ Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) standards; National Academy of Sciences, Washington DC July 2001, pp 3-11.

² Based on Manufacturer's Suggested Retail Prices available at <http://www.vw.com/jetta/engspec.htm>

³ Based on U.S. Dept. of Energy's weekly Petroleum Status Reports average U.S. retail fuel prices for August, 2000 (Diesel \$1.46/Gasoline \$1.50) and MY 2001 U.S. EPA Fuel Economy



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Ratings.

⁴ "Diesel Technology and the American Economy," Charles River Assoc. (Oct. 2000)

⁵ "Drilling in Detroit: Tapping Automaker Ingenuity to Build Safe and Efficient Automobiles," Union of Concerned Scientists & Center for Auto Safety (June 2001)

⁶ <http://www.vehiclechoice.org/safety/size.html>

⁷ Schipper, L. "Determinants of Automobile Use and Energy Consumption in OECD Countries," Annu. Rev. Energy Environ. (1995)

⁸ "The Impacts of Increased Diesel Penetration in the Transportation Sector," Office of Integrated Analysis and Forecasting, Energy Information Administration, U.S. Department of Energy (Aug. 1998); "Diesel Technology and the American Economy," Charles River Assoc. (Oct. 2000)